

### Ink Feed Adapter for Printing Machines

The invention relates to an ink feed adapter for a device for dosing inks into an ink duct of a printing machine, with a holder open in front or laterally for receiving an ink cartridge and a compressed air connection in the holder for the dispensing of ink.

Such a dosing device is disclosed for example in US 2003/0110967 A1. The ink feed conventionally takes place via ink cartridges, which are set into a space provided for this purpose of the cartridge holder such that it is replaceable. Ink cartridges are in particular used when only relatively small ink quantities are to be used for a specific printing process or provisions are to be made for a frequent ink [color] change. The use of ink cartridges requires monitoring the level of fill and the cartridge change is time consuming. For that reason, according to DE 199 53 324 C2 for an ink feed system of a different type an ink dispensing insert has been proposed, which, alternatively to an ink cartridge, can be set from the top into a sleeve-form holder only openable at the top, and which comprises an essentially cylindrical valve housing adapted to the inner cross section of the sleeve-form holder, which can be placed onto the bottom of the holder and, with a downwardly directed outlet tube, penetrates through a concentric outlet opening in the bottom. The ink dispensing insert comprises a connecting tube extending from the valve housing and penetrating through an upper cover of the sleeve-form holder for the interconnection with a flexible hose line extending from an ink [bulk] packaging outside of the holder. An ink dispensing valve in the ink dispensing insert is actuatable via a separate compressed air connection.

The aim of the present invention is providing an ink feed adapter which can readily be exchanged for an ink cartridge, in which the same compressed air supply, which is available in any case for ejecting the ink from an ink cartridge, can be made use of for the ink dosing when connected to a larger ink reservoir.

This aim is attained according to the invention or substantially thereby that the ink feed adapter is not only insertable into the cartridge receptacle space of the holder, open in front, of a dosing device of the above described type, for example substantially transversely to its longitudinal axis, but also comprises a compressed air inlet for the interconnection with the compressed air connection of the holder, otherwise serving for the ink dispensing from an ink cartridge, an ink feed inlet, preferably into the valve housing and an ink dispensing valve actuatable by means of the compressed air from the compressed air connection of the holder.

Without special additional measures it becomes feasible in this way in the case of dosing devices of the above described type to make useful the compressed air, which is available in any case, for the actuation of the ink dispensing valve even without the necessity of having to use a special cover.

In a further embodiment of the invention the ink feed adapter has an adapter housing, whose diameter and height is adapted to the dimensions of the ink cartridge receptacle space of the holder for an ink cartridge, for receiving the ink dispensing valve, such that the ink feed adapter can be simply replaced from the side with an ink cartridge and only the interconnection to the ink reservoir needs to be established, while the interconnection with the compressed air reservoir occurs self-actingly.

In an especially simple embodiment of the invention the adapter housing comprises at least two, for example circular, end plates held apart at a spacing by [reinforcing bar] spacers. The lower end plate forms the base in the holder, while the spacers, which can be formed as rods, leave open the free access to the ink cartridge receptacle space and the valve housing located in the adapter housing, such that the ink feed adapter can be simply connected to the ink feed *in situ*, for example through a connecting hose.

A preferably flexible interconnection between the compressed air inlet in the end plate facing the compressed air connection of the holder and a front-side or lateral compressed air inlet of the valve housing is in particular provided such that in the adapter housing diverse ink dispensing valves with correspondingly different valve housings can be accommodated.

It is further of advantage if the ink feed inlet discharges laterally into the valve housing in order to be readily accessible.

Further aims, characteristics, advantages and application feasibilities of the invention are evident based on the following description of embodiment examples in conjunction with the drawing. All described and/or depicted characteristics form by themselves or in any combination the subject matter of the invention, independently of their summary in individual claims or their reference back.

The sole figure of the drawing illustrates in oblique view an ink feed adapter comprising the invention, set into a device, known *per se*, for dosing ink into an ink duct of a printing machine with a holder open in its peripheral wall in front or laterally for receiving an ink cartridge.

The device depicted in the drawing for dosing ink into an ink duct of a printing machine has a holder H for receiving a (not shown) ink cartridge. The holder H is open in its peripheral wall in front and laterally over the entire height of the ink cartridge normally to be inserted, in order to be able to insert the latter from the front or from the side into the cartridge receptacle space 4 and self-actingly a compressed air interconnection results between [the ink cartridge and] such compressed air connection provided at the part H' of holder H located above the cartridge receptacle space 4. Due to the compressed air streaming into the conventionally provided ink cartridge the ink dispensing takes place from this ink cartridge to an ink dispensing opening in the part H'' of holder H located beneath the cartridge receptacle space 4.

After the drawing according to the invention, into the cartridge receptacle space 4 - instead of an ink cartridge - is inserted an ink feed adapter 13 of a special type. The height and the diameter of the ink feed adapter 13 is adapted to the dimensions of the cartridge receptacle space 4 which is open in front and on the side, such that when inserting the ink feed adapter 13 in the direction transversely to its longitudinal axis a compressed air inlet 1 located in an upper end plate 7 of an adapter housing 5 immediately establishes a flow interconnection with the compressed air outlet provided in any case in the upper part H' of holder H for use of the device with ink cartridges. Adjoining the compressed air inlet 1 in the downward direction is a flexible interconnection 8, which is formed for example by a hose connection, which leads to a compressed air inlet 9 of a valve housing 10 accommodated in the adapter housing 5. The compressed air inlet 9 can discharge from above at the front side or from the side in the valve housing 10.

In the valve housing 10 is located an ink dispensing valve 3, which, with the corresponding compressed air pressurization via the interconnection 8, can open downwardly into a (not shown) throughbore of a lower end plate 7' of the adapter housing 5, which, in turn, discharges into the (also not visible) ink dispensing opening of the lower part H'' of holder H.

The end plates 7, 7' are held via [reinforcing bar] spacers 6, formed as threaded rods, at the required distance for fitting the adapter housing 5 into the cartridge receptacle space 4, such that by employing spacers 6 of different length the adaptation to different spatial proportions and dimensions can be provided. The rod interconnection also ensures simple accessibility of the ink feed inlet 2, provided with threaded connection for a hose line 11, in the peripheral wall of the valve housing 10 of the ink dispensing valve 3. The hose line 11 is in flow interconnection with an ink [bulk] packaging from which ink is to be dispersed.

The diameters of the two circular end plates 7, 7' can be adapted to the diameters of the ink cartridges otherwise employed in such dosing device.

It is evident that in the solution according to the invention for setting the ink feed adapter 13 into the cartridge receptacle space 4, only the hose line 11 must be connected from the side to the ink feed inlet 2 of the valve housing 10. By disposing the compressed air inlet 1 in the upper end plate 7 of the ink feed adapter 13 and the interconnection 8 integrated into the ink feed adapter 13 no additional air hose for actuating the ink dispensing valve 3 is required. Also, when changing back to an ink cartridge it is not necessary additionally to couple on or off an air hose.

The invention is not limited to these embodiment examples described, since it can be realized in different ways. The terms used previously and in the claims serve only for the purpose of explanation and not of limitation.

**List of Reference Symbols:**

- 1 Compressed air inlet (ink feed adapter)
- 2 Ink feed inlet
- 3 Ink dispensing valve
- 4 Cartridge receptacle space
- 5 Adapter housing
- 6 Spacers
- 7, 7' End plates
- 8 Interconnection
- 9 Compressed air inlet (valve)
- 10 Valve housing
- 11 Hose line
- 12 Control box
- 13 Ink feed adapter
  
- H Cartridge holder